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EBASCO

ARCS II PROGRAM

Remedial Planning Activities at Selected Uncontrolled Hazardous Substance Disposal Sites Within EPA Region II (NY, NJ, PR, VI)

OVERSIGHT SUMMARY REPORT
NL INDUSTRIES SITE
PEDRICKTOWN, NEW JERSEY

JANUARY 1991

EPA Contract 68-W8-0110

EBASCO
An ENSERCH® Engineering and Construction Company

EPA WORK ASSIGNMENT NUMBER: 037-2P61
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EBASCO SERVICES INCORPORATED

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NOTICE

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NL INDUSTRIES
OVERSIGHT SUMMARY REPORT
JANUARY 1991

INTRODUCTION

On September 27, 1990 the U.S. Environmental Protection Agency (USEPA) authorized Ebasco Services Incorporated (Ebasco) to provide enforcement support (oversight) to USEPA Region II for continuing Remedial Investigation/Feasibility Study (RI/FS) activities to be conducted by the Potentially Responsible Party (PRP), NL Industries, Inc. at the NL Industries Inc. site located in Pedricktown, Salem County, New Jersey. Oversight activities were to be performed in response to Work Assignment Number 37-2P61 under Contract Number 68-W8-0110.

In mid-October 1990, O'Brien and Gere Engineers (OBG), consultants to NL Industries, initiated a third phase of the RI to determine the nature and extent of contamination present at the site and surrounding area. Field activities performed by OBG included: 1B to resample data previously collected data that had been rejected.

- Monitoring well installation
- Groundwater sampling
- Soil sampling
- Surface water sampling
- Sediment sample collection and preparation

The Phase III field program was completed in mid-December 1990.

The objectives of Ebasco's oversight activities were to monitor the PRP's Phase III investigation for adherance to USEPA - approved project plans, to obtain split samples to verify the analytical results obtained by the PRP, and to obtain depositional area sediment samples for CLP analysis.

Ebasco provided enforcement support throughout the Phase III field program. Ebasco's role was performed in accordance with its USEPA - approved Work Plan, Field Sampling and Analysis Plan (Phase I and II) and Phase III Sampling Program, and NL Industries' site-specific Health and Safety Plan.

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SUMMARY OF PHASE III REMEDIAL INVESTIGATION ACTIVITIES

This section presents a summary of the Phase III field activities performed by OBG for NL Industries. The discussion focuses on compliance with the PRP's Phase III Sampling Plan and Site Operations Plan (SOP). OBG was advised by the cognizant Ebasco representative whenever deviations from approved protocols were observed.

Monitoring Well Installation

Four groundwater monitoring wells were installed during the period October 17-26, 1990 by W.C. Services (drilling contractor). Figure 1 (attached) indicates the location of these wells as proposed in NL Industries' Phase III Sampling Plan. The depths cited for split-spoon sampling and well screen intervals, as indicated in the following paragraphs, are based on information provided by the PRP and its consultant and drilling contractor.

Double-cased Monitoring Well 10R was drilled using tricone roller bits and "mud" (QuikGel-bentonite powder). Split-spoon sampling began at a depth of 40 feet and continued to 70 feet. The well was set at 70 feet with the placement of a 5-foot screened interval. Construction of Monitoring Well 10R was in accordance with USEPA-approved protocol as stated in the PRP's ~~SOP.~~ It should be noted the well development was performed over a two-day period, with the well left unsecured overnight. well 10R

Drilling of triple-cased Monitoring Well 19 also utilized tricone roller bits and "mud". Problems with cement seepage were encountered when attempting to grout the 12-inch outer casing in place utilizing a tremie pipe. Approximately 7 feet of cement ultimately had to be drilled out from inside the casing. Following placement of the 8-inch casing, split spoon samples were continuously collected during drilling from 74 feet to 120 feet. The well was set at 120.3 feet with a 10-foot screen. The well was ultimately constructed in accordance with USEPA approved protocol.

During the drilling of double-cased Monitoring Well 20, continuous split-spoon sampling commenced at a depth of 30 feet. At a depth of 80 feet, OBG's geologist determined that the confining layer had been drilled through. The well was grouted with cement up to 64 feet and subsequently drilled out to a depth of 68 feet. The well was set at 68 feet with a 10-foot screen. The PVC screen and risers were not steam-cleaned at the site prior to installation. Rather, the driller removed the well material from the plastic packaging without using gloves and installed them directly in the borehole. Despite the two anomalies cited, Monitoring Well 20 was constructed in accordance with USEPA-approved protocol.

Double-cased Monitoring Well 21 was set at a depth of 81 feet with the installation of a 10-foot screened interval. Split-spoon samples were continuously collected during drilling between 35 feet and 81 feet. The well was developed immediately after being grouted in place, rather than allowing the grout to set for a few hours prior to development. Nevertheless, construction of the monitoring well was in accordance with USEPA-approved protocol.

Monitoring Well Sampling

Groundwater was sampled from 22 monitoring wells identified in the PRP's Phase III Sampling Plan during October and November 1990 to confirm the concentrations of contaminants detected during the two prior phases of sampling (August 1988 and August 1989). The four monitoring wells installed during October 1990 were sampled on November 26, 1990. Eighteen existing monitoring wells were sampled during October 29-31, 1990 and November 26-27, 1990. OBG evacuated at least three well volumes and measured pH, conductivity, and turbidity prior to well sampling. Some samples required filtration due to the high suspended solids content of the groundwater. Groundwater split samples were taken by Ebasco at the following three wells for CLP analysis (indicated in ( )): 2R2 (VOAs, trace metals, radionuclides), 10R and 19 (full TCL analysis).

Deviations from protocols stated in the USEPA-approved Site Operations Plan were observed in the following five instances during Phase III groundwater sampling:

1) The sampling equipment was not properly decontaminated after collection of each sample. The bailer was not rinsed with acetone followed by hexane prior to the collection of samples designated for organic analyses. In addition, commercially available "Dove" liquid soap was used rather than the specified non-phosphate detergent.

2) One field blank was not collected for each day of sampling.

3) Air in the well heads were not sampled with an organic vapor detector prior to the collection of groundwater samples.

4) Distilled water was provided from a commercial source for use during field operations, rather than from OBG laboratories as a specified part of the approved QA/QC program.

5) Water levels were measured to the nearest foot, rather than the nearest 0.01 foot as required.

It should also be noted that the PRP insisted on collecting groundwater samples at night on November 26, 1990. Under artificial lighting conditions, Ebasco was unable to confirm the pH during preservation of split groundwater samples collected from Monitoring Wells 10R and 19.

Soil Sampling ok

Composite soil samples were collected by OBG from six locations sampled previously (five on-site, one off-site) and five new off-site locations to verify the presence of elevated lead concentrations. The samples were collected during November 1-2, 1990 at depths specified in the PRP's Phase III Sampling Plan. The five on-site locations are identified on Figure 2. (attached). Ebasco observed the preparation of soil samples for analysis at OBG's Syracuse, New York laboratory on December 13, 1990. Split samples were obtained from the 18-24 inch depth at on-site locations 213 and 217 and from the four specified depths at one of the new off-site locations. Four split samples were submitted for total lead analysis and one split sample was shipped for trace metals analysis.

OBG deviated from the USEPA-approved soil sampling protocol in the following two instances during Phase III sampling.

1) Ebasco did not observe the collection of any field blanks during the two days of soil sampling.

2) The field team utilized a line method of sampling at one heavily vegetated off-site location instead of the preferred three-meter circle method identified in the PRP's SOP.

However, NL Industries' Work Plan specified that the line method was to be used when a three-meter circle cannot physically be utilized around the grid point. Therefore, the line method is considered to be an acceptable alternative.

Surface Water and Sediment Sampling

Phase III surface water and sediment samples were collected by OBG in two stages. On November 1, 1990, sediment samples were collected at six previously sampled West Stream locations specified in the PRP's Phase III Sampling Plan. Surface water samples were collected at two of these same West Stream locations. In addition, sediment samples were collected from seven newly identified East Stream locations. A surface water sample was obtained from one of these East Stream locations. Ebasco obtained one split surface water sample for total lead analysis at this East Stream location.

During December 10-12, 1990, OBG collected both surface water and sediment samples from thirteen depositional area locations designated by the USEPA (see Figure 3). Ebasco obtained split surface water samples at Locations 2 and 11 for full TCL analysis and trace metals analysis, respectively. At Location 2, Ebasco also obtained split sediment samples at depths 0-6 inches and 6-12 inches for TCL VOAs and TCL Extractable analyses. OBG was unable to collect any sediment samples beyond a depth of 12 inches utilizing the split-spoon method at this location. The PRP also collected additional sediment samples at those locations where the stream was wider than 3 feet for subsequent compositing prior to analysis. OBG personnel packed and shipped all sediment samples collected in Lexan cores to their Syracuse laboratory.

On December 13 and 14, 1990, Ebasco personnel observed the preparation of Phase III sediment samples at OBG's laboratory. Four of the Lexan cores containing depositional area samples from USEPA designated Locations 1, 2, 3, and 4 were found broken in numerous pieces upon receipt at the lab. After consultation with Laura Scalise, USEPA's Project Quality Assurance Officer, the samples were deemed invalid for further processing and analysis. Of the nine USEPA cores which were found intact and produced acceptable samples, only one (Location 7) yielded sufficient sample quantity to perform the analyses for each of the three depths specified in the PRP's Phase III Sampling Plan (see Table 1).

In addition, approximately 8 of the PRP's cores which were to have been composited were also found broken and were discarded by OBG personnel. Ebasco obtained five composite split sediment samples from OBG from the remaining PRP cores (see Table 2).

OBG deviated from approved sample collection and preparation protocol in five instances during the Phase III Program:

(1) No field blanks were collected during sampling on November 1, 1990 and December 10, 1990.

(2) Surface water sampling equipment was not decontaminated between sample locations.

(3) Surface water samples were collected out of sequence at Location 2 (required: VOAs, extractables, metals; actual: metals, extractables, VOAs).

(4) The split spoon was not rinsed with acetone followed by hexane during decontamination prior to collection of the rinse blank (soap bubbles were observed in the rinsate).

(5) The PRP's sediment samples which were collected and composited during the week of December 10, 1990 were not thawed in an aluminum foil-lined pan, nor homogenized (the Lexan tubes were shattered with a hammer to remove the frozen sample).

TABLE 1

NL INDUSTRIES
PHASE III SEDIMENT SAMPLING
DEPOSITIONAL AREA SAMPLES SUBMITTED FOR CLP ANALYSES

Sampling Location	Depth (inches)	Laboratory Analyses		
		Trace Metals	Grain Size	TOC
5	0-6	X	X	
	6-8	X	X	
6	0-6	X	X	X
	6-12	X	X	X
	12-16	X	X	
7	0-6	X	X	X
	6-12	X	X	X
	12-18	X	X	X
8	0-6	X	X	X
	6-10	X	X	X
9	0-6	X	X	X
	6-12	X	X	
10	0-6	X	X	X
	6-11	X	X	X
11	0-6	X	X	X
12	0-6	X	X	X
	6-10	X	X	X
13	0-6	X	X	X
	6-10.5	X	X	X

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TABLE 2

NL INDUSTRIES
PHASE III SEDIMENT SAMPLING
COMPOSITE SPLIT SAMPLES SUBMITTED FOR CLP ANALYSES

Sampling Location	Depth (inches)	Laboratory Analyses				
		Trace Metals	Grain Size	TOC	TCLP	Lead
8	0-6	X	X	X		
WS-9	0-6				X	
WS-15	0-6					X
ES-14	0-6					X
ES-16	0-6					X

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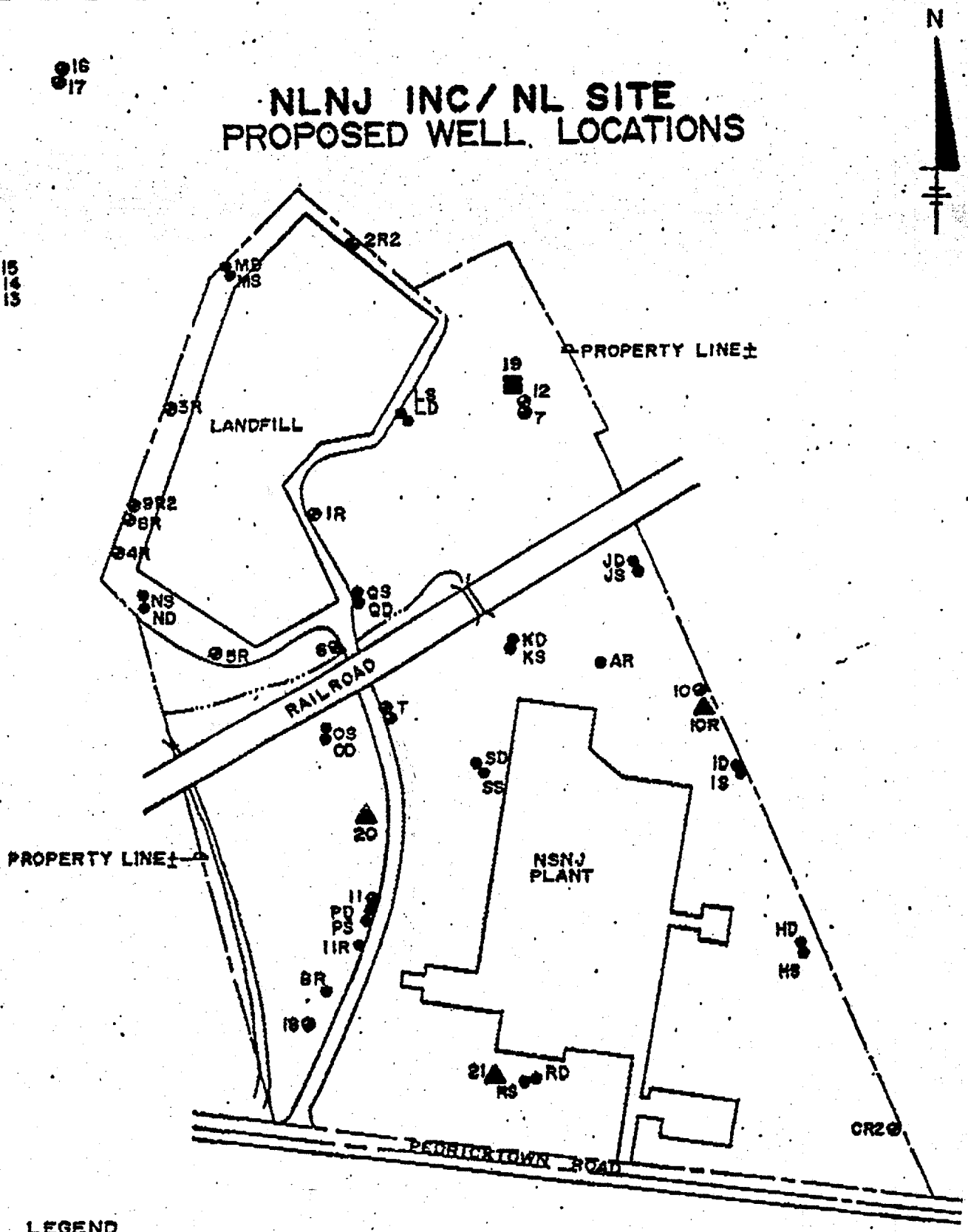
NLNJ INC/ NL SITE
PROPOSED WELL LOCATIONS



LEGEND

- ● 2" WELL NESTED PAIR
- ◉ 4" WELL
- ▲ PROPOSED 1st CONFINED WELL
- ■ PROPOSED 2nd CONFINED WELL

SCALE IN FEET

300 100 0 100 500

1" = 300'

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O'BRIEN & GERE ENGINEERS INC

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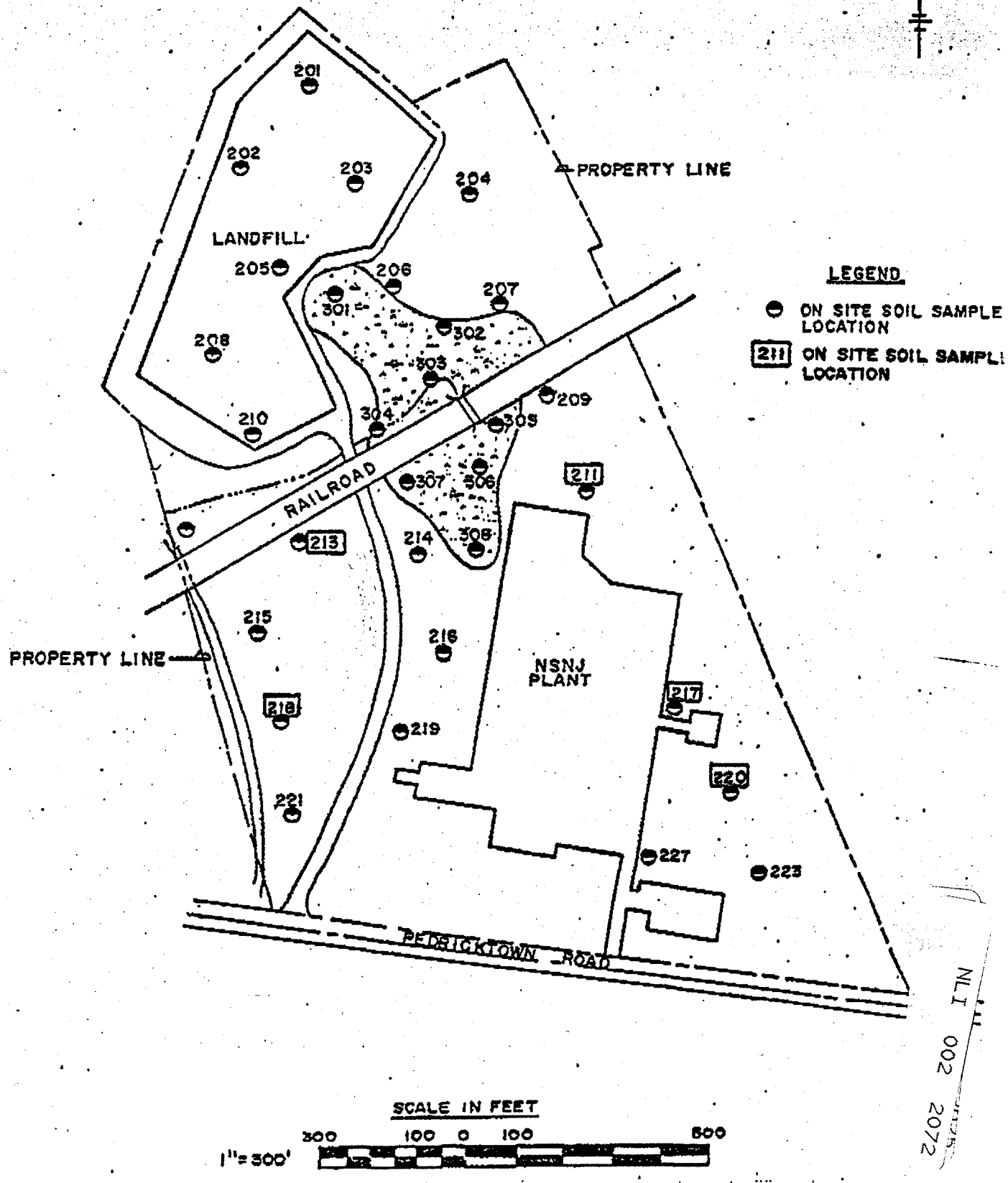
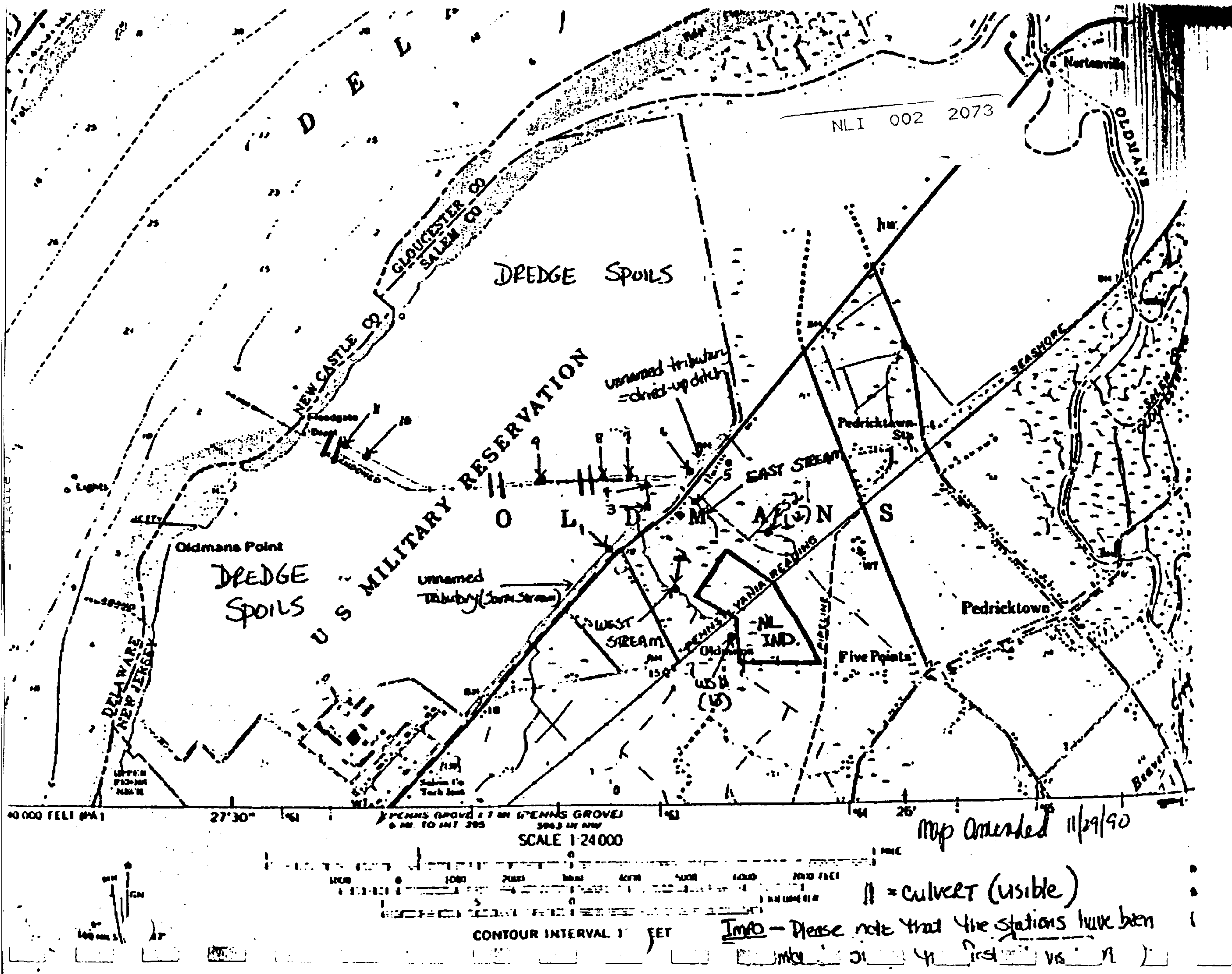
NSNJ INC / NL SITE
ON-SITE SOIL SAMPLE LOCATION MAP





NLI 002 2073
DREDGE SPOILS
DREDGE SPOILS
GLOUCESTER CO
SALEM CO
NEW CASTLE CO
US MILITARY RESERVATION
unnamed tributary = dried-up ditch
unnamed tributary (South Stream)
EAST STREAM
WEST STREAM
OLDMANS
NL IND.
Oldmans Point
Floodgate
Pedricktown
Pedricktown Sta
Five Points
Norteanville
SEASHORE
PENNSYLVANIA READING
PIPELINE
DELAWARE
NEW JERSEY
Salem Co Tech Inst
27'30"
26'
SCALE 1:24000
CONTOUR INTERVAL
Map Amended 11/29/90
|| = culvert (visible)
Info — Please note that the stations have been